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10/822,061	04/09/2004	Theresa Mary Brown	TUC920030052US1	2087

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EXAMINER	
CAMPOS, YAIMA	

ART UNIT	PAPER NUMBER
2185	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

krvuspto@ipmatters.com

Office Action Summary	Application No.	Applicant(s)	
	10/822,061	BROWN ET AL.	
	Examiner	Art Unit	
	YAIMA CAMPOS	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. As per the instant Application having Application number 10/822,061, the examiner acknowledges the applicant's submission of the amendment dated 11/20/2008. At this point, claims 1 and 3 have been amended, and claims 8-9 and 13-30 have been canceled. Claims 1-7 and 10-12 are pending.

REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-3, 7 and 10** are rejected under 35 U.S.C. 102(e) as being anticipated by Parrish et al. (US 5,117,350).

3. As per claim 1, Parrish discloses A method for allocating resources, comprising:

at a cluster, allocating reserved resources to one or more depth levels, wherein the reserved resources form one or more reserved pools; **[memory is allocated at each node (*interpreted as a cluster*) from different depths levels such as local address space and system address space which is a higher level address space wherein each address space comprises a pool of memory resources (figs. 2 and 7 and related text; col. 8, lines 46-57; col. 9, lines 40-43)]** upon receiving a request for allocation of resources, determining a depth level from which to allocate resources determining whether the request is remote request from a different cluster or a local request from the cluster; **["remote memory addresses must reside outside the range of any local or private memory space" (col. 9, lines 50-52) "local address space which is directly accessible by the functional unit(s) connected to the local bus in a single node and**

system address space which is a higher level address linking the local address spaces in several nodes" (col. 8, lines 46-49; col. 7, lines 33-43) wherein local and system address spaces are interpreted as different depth levels from which to allocate resources]

in response to determining that the request is a remote request, determining that the depth level is a next depth level; **[a node receiving a request determines the request is external and is translated to map to shared area for the receiving node (col. 7, lines 33-43; col. 11, lines 6-53; col. 9, lines 50-52) which is interpreted as a next depth level in relation to local address space]**

in response to determining that the request is a local request, determining that the depth level is a current depth level; **["a node can always allocate a block in local memory solely for local storage and access" (col. 16, lines 30-33) "each local task is required to allocate the memory partition itself" (col. 16, lines 47-49) (col. 9, lines 50-52); thus allocating local requests at a node from local storage pool at a current depth level in relation to system address space]**

and attempting to allocate a reserved pool from the determined depth level **[memory is allocated to tasks either in local address space or system address space which are interpreted as different depth levels (see above) Further refer to (fig. 3 and related text)]**.

4. As per claim 2, Parrish discloses The method of claim 1, further comprising: generating control structures that indicate which resources are allocated to which processes **[Parrish discloses partition maps and MMU to perform memory allocation wherein ISC 133 is local memory only allocated to Node B and Memory 134 is System memory allocated to tasks of Node A requesting memory to Node B (fig. 3 and related text). Further generating**

"memory partition status" shows information for all system partitions (col. 19, lines 16-32)].

5. As per claim 3, Parrish discloses The method of claim 1, wherein the allocations occur at a first cluster and further comprising: at the first cluster, waiting for a second cluster to finish initialization processing that allocates reserved resources of the second cluster to each of multiple depth levels before allowing requests for resources to be processed at the first cluster **[a first node/cluster must wait for memory partitions to be created prior to allocating memory from system memory address space or system memory partition located at a second node/cluster (fig. 7 and related text; col. 12, lines 61-col. 13, line 20; col. 15, lines 1-28)]**.

6. As per claims 7, Parrish discloses The method of claim 1, further comprising: determining that a reserved pool at the determined depth level has been allocated; and allocating a resource from the reserved pool **[memory from either local address space or system address space, wherein each comprise a pool of memory resources and each is at a different depth level for each node (*either local or system*) is allocated to a task (figs. 2-3 and related text; col. 7, lines 33-43; col. 8, lines 46-49; col. 9, lines 50-52; col. 11, lines 6-53)]**.

7. As per claim 10, Parrish discloses The method of claim 7, further comprising: determining that processing with the resource is complete; and returning the resource to a pool of resources **[“allocating various ones of said partitions to selected memory (tasks) as required and deallocating those allocated partitions that are not required" (col. 21, lines 50-53)]**.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Parrish et al. (US 5,117,350) in view of Singh et al. (US 6,625,159).

10. As per claim 4, Parrish discloses he method of claim 1, where some memory is left unallocated as shaded portions **[See fig. 8A and related text]** but does not disclose expressly when the allocation of the reserved pool is unsuccessful, attempting to allocate resources from an unreserved pool.

Singh discloses when the allocation of the reserved pool is unsuccessful, attempting to allocate resources from an unreserved pool as **[the available resources of a buffer pool are divided among reserved and unreserved buffers wherein the reserved buffers ensure each port will obtain the minimum number of buffers needed for communications and the unreserved buffers are available to any port to handle communications having a need exceeding the reserved buffers (col. 2, lines 22-40; col. 3, lines 42-49; col. 4, lines 32-45)]**.

Parrish and Singh are analogous art because they are from the same field of endeavor of memory access and control; more specifically, allocation and deallocation of resource in a computer system.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the system/method wherein reserved pools of resources are provided to allocate these resources to tasks as taught by Parrish, and further provide an unreserved pool of resources in addition to the reserved pool from which to allocate resources in case allocation of the reserved resources fails or is unavailable, as taught by Singh.

The motivation for doing so would have been because Singh discloses providing additional unreserved buffers provides the advantage of having resources available during high traffic periods while maintaining fair use of share memory and preventing deadlocks **[(col. 2, lines 22-40; col. 8, lines 20-36)]**.

Therefore, it would have been obvious to combine Parrish with Singh for the benefit of creating a resource allocation system and method to obtain the invention as specified in claim 4.

11. **Claims 5 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrish et al. (US 5,117,350) in view of Singh (US 6,625,159), and further in view of Leong et al. (US 2003/0182503).

12. As per claim 5, the combination of Parrish and Singh discloses The method of claim 4, further comprising: [**Singh discloses if no unreserved buffers are available, the package is dropped (col. 5, lines 20-21)]**, but does not disclose expressly when the allocation from the unreserved pool is unsuccessful, placing the request in a data structure to wait for a reserved pool.

Leong discloses placing requests in a data structure to wait for a reserved pool when resources are not available **["if all of the necessary resources are not available (path 420), the state of the I/O task changes to a suspended state 425. In this state, the I/O task waits, for example on a wait queue until the occurrence of an event, for example, all the necessary resources becoming available" (par. 0082)]**.

Parrish, Singh and Leong are analogous art because they are from the same field of endeavor of memory access and control; more specifically, allocation and deallocation of resource in a computer system.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the system/method wherein reserved pools of resources are provided to allocate these resources to tasks as taught by Parrish, and further provide an unreserved pool of resources in addition to the reserved pool from which to allocate resources in case allocation of the reserved resources fails or is unavailable, as taught by Singh and further place requests in a data structure to wait for a reserved resource when unreserved resources are not available such as in the unavailability of unreserved buffers taught in Singh.

The motivation for doing so would have been because allowing the combined system of Parrish and Singh to place requests in a data structure to wait for a reserved pool when necessary resources are not available would prevent tasks from being dropped without being completed such as taught by Singh, thus allowing all tasks to complete as resources become available as taught by Leong **[(par. 0082)]**.

Therefore, it would have been obvious to combine Parrish with Singh for the benefit of creating a resource allocation system and method to obtain the invention as specified in claim 5.

13. As per claim 12, Parrish discloses The method of claim 10, further comprising: when the resource is returned to a reserved pool, allocating the freed reserved pool to a request for allocation of a reserved pool at a current depth level **[allocating partitions to memory tasks as required and deallocating partitions that are not required; thus the partitions may be again allocated to either local or external tasks in either local address space or system address space (col. 21, line 50-54)]**, but does not disclose expressly that when a resource is returned to an unreserved pool, allocating the freed unreserved pool to a request for allocation of a reserved pool; nor waiting for available resources.

Singh discloses when a resource is returned to an unreserved pool, allocating the freed unreserved pool to a request for allocation of a reserved pool as **[the available resources of a buffer pool are divided among reserved and unreserved buffers wherein the reserved buffers ensure each port will obtain the minimum number of buffers needed for communications and the unreserved buffers are available to any port to handle communications having a need exceeding the reserved buffers (col. 2, lines 22-40; col. 3, lines 42-49; col. 4, lines 32-45) wherein "where an unreserved buffer is used... Cu is decremented and the packet buffer is marked as allocated to unreserved" (col. 5, lines 16-18) "once the packet has been transmitted, it must be determined whether the packet occupied a reserved or unreserved buffer. If the packet occupied an unreserved buffer... Cu should be incremented. Hence, after the transmission, the buffer is released to free buffer pool" (col. 5, lines 23-27)]**.

Leong discloses placing requests in a data structure to wait for a reserved pool when resources are not available **["if all of the necessary resources are not available (path 420), the state of the I/O task changes to a suspended state 425. In this state, the I/O task waits, for example on a wait queue until the occurrence of an event, for example, all the necessary resources becoming available" (par. 0082)]**.

Parrish, Singh and Leong are analogous art because they are from the same field of endeavor of memory access and control; more specifically, allocation and deallocation of resource in a computer system.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the system/method wherein reserved pools of resources are provided to allocate

these resources to tasks as taught by Parrish, to provide an unreserved pool of resources in addition to the reserved pool from which to allocate resources in case allocation of the reserved resources fails or is unavailable, as taught by Singh, and further to place requests in a data structure to wait for a reserved resource when unreserved resources are not available such as in the unavailability of unreserved buffers taught in Singh.

The motivation for doing so would have been because Singh discloses providing additional unreserved buffers provides the advantage of having resources available during high traffic periods while maintaining fair use of share memory and preventing deadlocks **[(col. 2, lines 22-40; col. 8, lines 20-36)]** and allowing the combined system of Parrish and Singh to place requests in a data structure to wait for a reserved pool when necessary resources are not available would prevent tasks from being dropped without being completed such as taught by Singh, thus allowing all tasks to complete as resources become available as taught by Leong **[(par. 0082)]**.

Therefore, it would have been obvious to combine Parrish with Singh and Leong for the benefit of creating a resource allocation system and method to obtain the invention as specified in claim 12.

14. **Claims 6 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parrish et al. (US 5,117,350) in view of Leong et al. (US 2003/0182503).

15. As per claims 6 discloses The method of claim 1, but does not disclose expressly wherein the resources are task control blocks; however, the Examiner asserts that task control blocks are well known resource types **[Refer to Leong - resources are for example data structures to hold an instance of the I/O task that is generated and nvram slot is an allocation of non-volatile memory sized to hold task specific intermediate state information (par. 0093)]**

wherein it would have been obvious to one having ordinary skill in the art to apply the memory/resource allocation where local and system memory resources are allocated to local or external tasks as taught by Parrish to task control blocks since task control blocks are well known resources necessary for task execution.

16. As per claim 11, Parrish discloses The method of claim 10, but does not disclose expressly when the resource is returned to a reserved pool, determining whether all resources have been returned to that reserved pool; when all resources have been returned, freeing the reserved pool for allocation to another process; and allocating the freed reserved pool to a request waiting for allocation of a reserved pool.

Leong discloses when the resource is returned to a reserved pool, determining whether all resources have been returned to that reserved pool; when all resources have been returned, freeing the reserved pool for allocation to another process; and allocating the freed reserved pool to a request waiting for allocation of a reserved pool as **["the resource manager allocates all resources from a given pool at once. For example, the resource manager allocates all resources requested for a mirror write I/O task 610 before allocating resources needed for buffer headers 615. Resources can be freed in any order" (par. 0097) "the resource manager deallocates the resources 610, 615 and 630 (e.g., releases the resources back to the storage system 105 by indicating they are available) and starts the allocation process again" (par. 0100) wherein "I/O task waits, for example on a wait queue, until the occurrence of an event, for example, all the necessary resources becoming available" (par. 0082)]**.

Parrish, Leong are analogous art because they are from the same field of endeavor of memory access and control; more specifically, allocation and deallocation of resource in a computer system.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the system/method wherein reserved pools of resources are provided to allocate these resources to tasks as taught by Parrish, and further when resource is returned to a reserved pool, determining whether all resources have been returned to that reserved pool; when all resources have been returned, freeing the reserved pool for allocation to another process; and allocating the freed reserved pool to a request waiting for allocation of a reserved pool as taught by Leong.

The motivation for doing so would have been because Leong discloses all resources from a given pool are allocated at once where resources and grouped in pools containing different type of resources so that only the necessary and related resources in a given pool are allocated **[(par. 0097)]** and discloses placing tasks in a waiting queue to wait for all necessary resources to be available in order to assure the completion of each task with the necessary resources **[(par. 0082)]**.

Therefore, it would have been obvious to combine Parrish with Singh and Leong for the benefit of creating a resource allocation system and method to obtain the invention as specified in claim 11.

ACKNOWLEDGMENT OF ISSUES RAISED BY THE APPLICANT

Response to Amendment

17. Applicant's arguments filed on 11/20/2008 have been fully considered but they are moot in view of the new ground(s) of rejection.

CLOSING COMMENTS

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner's Note

19. Examiner has cited particular columns and line numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from

the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

a. STATUS OF CLAIMS IN THE APPLICATION

20. The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. 707.07(i)**:

a(1) CLAIMS REJECTED IN THE APPLICATION

21. Per the instant office action, claims 1-7, and 10-12 30 have received an action on the merits and are subject of a final rejection.

b. DIRECTION OF FUTURE CORRESPONDENCES

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yaima Campos whose telephone number is (571) 272-1232. The examiner can normally be reached on Monday to Friday 8:30 AM to 5:00 PM.

IMPORTANT NOTE

23. If attempts to reach the above noted Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Sanjiv Shah, can be reached at the following telephone number: Area Code (571) 272-4098.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained

from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 29, 2009

/Yaima Campos/
Examiner, Art Unit 2185

/Sanjiv Shah/

Supervisory Patent Examiner, Art Unit 2185